



CASE STUDY – Passivhaus Solution

BUFCA SUPPLIER: BASF Polyurethanes U.K. Ltd

THE SITUATION

A solution was required for a cluster of residential buildings in a rural location to provide a warm and energy efficient living space designed to meet the demanding requirements of the Passivhaus standard.

SOLUTION

Consisting of both new build and the conversion of a stone-walled barn, the development has used Walltite spray foam insulation to meet both thermal insulation and airtightness requirements throughout the structures.



The old barn building had solid stone walls: to get the required U-value of $0.26\text{W/m}^2\text{K}$, a 75mm layer of Walltite was sprayed directly onto the interior wall surface, forming a seamless finish that is not only thermally efficient but is also airtight and watertight. The Walltite layer was then covered with plasterboard for the interior finish.

The new build structures, on the other hand, were constructed of two leaves of concrete blocks with a 200 mm cavity held with insulating wall ties. This cavity was filled with Walltite CV 100 injection grade – a variation of the spray foam product that is designed to be injected into cavity walls. The result was a U-value of $0.12\text{W/m}^2\text{K}$.

Edge Architecture, project designers, wanted all the buildings to follow the design principles of Passivhaus standards. This requires not only extremely efficient thermal insulation but also the highest airtightness standard. Walltite, being spray applied, is a highly reliable method of ensuring airtightness as any detailing is easily accommodated and jointing between insulation on the walls and roof is also completely reliable. The buildings for this project had a target airtightness of $1\text{m}^3/\text{hr}/\text{m}^2 @ 50\text{Pa}$.

Eric Davidson from Reinco, Renewables and Insulation Consultancy observed: "It's a neat and practical solution and particularly good in eliminating thermal bridging at joints". Eddie Burgess at Edge Architecture can see the advantages of the product: "It absolutely does what we wanted it to do. It was also quick to install and caused us no problems on site. We will be specifying the product again."